

# Claims

- [c1] 1. A label printer for printing on labels spaced longitudinally along a carrier web with each label having a predetermined thickness and a leading edge and a trailing edge, the printer comprising:
- a driving mechanism for advancing the carrier web along a media path,
  - a thermal print head assembly supported by a frame,
  - the thermal print head assembly mounted for movement toward and away from the carrier web and including a line of heater elements aligned transverse to the direction of travel of the carrier web,
  - a bias mechanism urging the print head toward the web so that the heater elements are pressed against the web,
  - a motion sensor for sensing a displacement of the print head assembly due to the passages of the edges of the labels beneath the heater elements, and
  - a controller responsive to the motion sensor for synchronizing printing with the edges of each label;
- the motion sensor arranged rigidly coupled to the frame at a first end.
- [c2] 2. The label printer of claim 1, wherein each of the labels

is removably  
attached to the carrier web by a pressure-sensitive adhesive.

[c3] 3. The label printer of claim 1, wherein each of the labels has a  
thermally sensitized surface engageable with said heater elements.

[c4] 4. The label printer of claim 1, and further comprising a thermally  
activated ink transfer ribbon disposed between the heater elements and the web.

[c5] 5. The label printer of claim 1, wherein the motion sensor is a piezoelectric transducer coupled between the frame and the print head; the motion sensor arranged to bend in response to the displacement of the print head.

[c6] 6. The label printer of claim 1, wherein the motion sensor is a piezoelectric transducer coupled to a bending member coupled at a first end to the frame and at a second end to the print head, the bending member arranged to bend in response to the displacement of the print head.

[c7] 7. The label printer of claim 1, wherein the motion sen-

sor is an arrangement including an emitter, a reflector and a detector; and  
at least one of the emitter, the reflector and the detector is rigidly coupled to the frame.

[c8] 8. The label printer of claim 7, wherein the reflector is connected to the print head and the emitter arranged to direct a beam onto the reflector, the beam reflected to the light detector according to the displacement of the print head.

[c9] 9. The label printer of claim 1, wherein the motion sensor is a position sensor connected to the frame.

[c10] 10. The label printer of claim 1, wherein the thermal print head is rigidly coupled to a pivot which extends through the frame;  
the motion sensor mounted to a far side of the frame, responsive to angular displacement of the pivot.

[c11] 11. The label printer of claim 10, wherein the motion sensor is an arrangement including a light emitter and a detector;  
The light emitter and the detector separated by a variable area mask coupled to the pivot.

[c12] 12. The label printer of claim 10, wherein the motion sensor is an arrangement including an electrical position

sensor and a target probe;  
the target probe mounted on an arm coupled to the  
pivot.

- [c13] 13. A label printer for printing on labels spaced longitudinally along a carrier web with each label having a predetermined thickness and a leading edge and a trailing edge, said printer comprising:
- a driving mechanism for advancing the web along a path,
  - a print head support mounted for movement toward and away from the web,
  - a thermal print head carried by said support for movement therewith and including a line of heater elements aligned transverse to the direction of travel of the web,
  - a bias mechanism urging the print head support toward the web so that the heater elements are pressed against the web,
  - a motion sensor carried by the support for sensing displacement of the print head due to the passages of the edges of the labels beneath the heater elements, and
  - a controller responsive to the motion sensor for synchronizing printing with the edges of each label;
- the motion sensor arranged rigidly coupled to the frame at a first end.

- [c14] 14. The label printer of claim 13, wherein each of the labels is removably attached to the carrier web by a pressure-sensitive adhesive.
- [c15] 15. The label printer of claim 13, wherein each of the labels has a thermally sensitized surface engageable with said heater elements.
- [c16] 16. The label printer of claim 13, and further comprising a thermally activated ink transfer ribbon disposed between the heater elements and the web.
- [c17] 17. The label printer of claim 13, wherein the motion sensor is a piezoelectric transducer coupled between the frame and the support; the motion sensor arranged to bend in response to the displacement of the print head.
- [c18] 18. The label printer of claim 13, wherein the motion sensor is a piezoelectric transducer coupled to a bending member coupled at a first end to the frame and at a second end to the support, the bending member arranged to bend in response to the displacement of the print head.

- [c19] 19. The label printer of claim 13, wherein the motion sensor is an arrangement including an emitter, a reflector and a detector; and  
at least one of the emitter, the reflector and the detector rigidly coupled to the support.
- [c20] 20. The label printer of claim 19, wherein the reflector is connected to the print head and the emitter arranged to direct a beam onto the reflector and reflected to the light detector according to the displacement of the print head.
- [c21] 21. The label printer of claim 13, wherein the motion sensor is a position sensor connected to the frame.
- [c22] 22. The label printer of claim 13, wherein the the print head support is rigidly coupled to a pivot which extends through the frame;  
the motion sensor mounted to a far side of the frame, responsive to angular displacement of the pivot.
- [c23] 23. The label printer of claim 22, wherein the motion sensor is an arrangement including a light emitter and a detector;  
The light emitter and the detector separated by a variable area mask coupled to the pivot.
- [c24] 24. The label printer of claim 22, wherein the motion

sensor is an arrangement including an electrical position sensor and a target probe;  
the target probe mounted on an arm coupled to the pivot.